

United States Patent [19]**Channin**

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4,385,805

[45]

May 31, 1983**[54] LIQUID CRYSTAL LENS DISPLAY SYSTEM****[75] Inventor:** Donald J. Channin, Princeton, N.J.**[73] Assignee:** RCA Corporation, New York, N.Y.**[21] Appl. No.:** 165,761**[22] Filed:** Jul. 3, 1980**Related U.S. Application Data****[63]** Continuation of Ser. No. 902,738, May 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 736,883, Oct. 29, 1976, abandoned.**[51] Int. Cl.³** G02F 1/13**[52] U.S. Cl.** 350/334; 350/336;
350/347 V**[58] Field of Search** 350/334, 336, 347 V,
350/356, 379, 392, 393**[56] References Cited****U.S. PATENT DOCUMENTS**

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Channin, D. J., "Optical Waveguide Modulation Using

Nematic Liquid Crystal", *Applied Physics Letters*, vol. 22, No. 8, (Apr. 15, 1973), pp. 365-366.Marchand, E. W., *Gradient Index Optics*, N.Y., Academic Press, 1978, pp. 1-14.**Primary Examiner**—John K. Corbin**Assistant Examiner**—Richard Gallivan**Attorney, Agent, or Firm**—Birgit E. Morris; H. Christoffersen**[57]****ABSTRACT**

A liquid crystal lens display system comprises a liquid crystal lens, display elements, a polarizer and a light source. The liquid crystal lens comprises a dielectrically anisotropic liquid crystal material covering two electrodes each having a plurality of spaced, parallel, interleaved fingers. The display elements comprise one or more elements to which are affixed alphanumeric or analog information and which are optically distinguishable. The angle of refraction of light passing through the liquid crystal lens is electrically alterable by applying a voltage source to the lens' electrodes. Portions of one of the display elements viewed through an activated liquid crystal lens are changed since light from these portions are no longer within the field of view of the observer.

8 Claims, 9 Drawing Figures